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The ecological estimation of Sredniy Kaban lake based on molecular methods

Kazan Federal University, 420008, Kremlevskaya 18, Kazan, Russia

Abstract

© 2018 Authors. Sredniy Kaban lake is part of the system of Kaban urban lakes, experiencing anthropogenic load, and being currently used for sporting events in rowing. Monitoring of the reservoir is carried out regularly with restoration and improvement activities, and green beaches landscaped. Assessment of the ecological state of the reservoir and the surrounding environment is carried out by different methods, one of the main is bioindication. The method is based on the study of indicator species, identified by obsolete methods based on their morphological features. As an alternative to the visual approach with the use of a microscope, the paper considers a method for identifying hydrobionts by the CO1 marker gene based on the DNA-barcoding method and modern sequencing methods. The sequenced sequences of the fragment of the CO1 hydrobiont gene of freshwater Sredniy Kaban lake in the autumn (2016) and summer (2017) sampling periods in the fastq format are included in the international database on the NCBI's website with unique numbers SRR5852708 (2016) and SRR5839796 (2017). The paper presents the results of the analysis and gives an assessment of the water quality of Sredniy Kaban lake (Kazan, Russia). Comparative analysis of metagenomic data shows that most of the animals of Sredniy Kaban lake are grouped near the b-mesosaprobic zone in 2016, and o-saprobic zone in 2017. By water quality Sredniy Kaban lake is transitional from b---saprobic to b-amesosaprobic as of the results of 2016, and according to the results of 2017 - from b-o-saprobic to o-saprobic, which is due to the restoration activities carried out during this period on Sredniy Kaban lake.

Keywords

Bioindication, DNA-barcoding, Next-generation sequencing, Saprobity

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